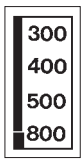
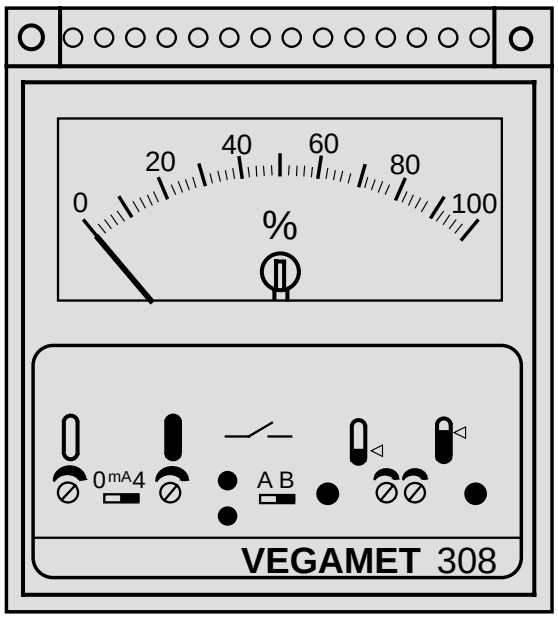
VEGAMET 307 / 308

TIB • Technical Information • Operating Instructions

Signal conditioning instrument





for continuous level measurement

- for connection of a capacitive measuring electrode

or

- a pressure sensor

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Application

These signal conditioning instruments VEGAMET 307 / 308 are used for level proportional output and indication of levels (continuous level measurement).

The VEGAMET 308 is additionally equipped with an integral level switch with adjustable switching hysteresis. Therefore level dependent switching functions are possible.

Configuration

The **VEGAMET 307** consists of:

- plastic housing with pluggable multipoint connector (series 300)
- electronics
- front panel with
  - analog indicating meter
  - mains control lamp
  - potentiometer for empty adjustment
  - potentiometer for full adjustment
  - change-over switch for current output range 0 … 20 mA or 4 … 20 mA.

The **VEGAMET 308** consists of:

- as VEGAMET 307
- however additional adjustment elements for the level switch:
  - 2 pressure keys and 2 potentiometers for adjustment of the switch points
  - relay control lamp
  - A/B-switch

A **measuring system** consists of:

- signal conditioning instrument VEGAMET 307 or VEGAMET 308
- capacitive electrode with oscillator

or

- pressure sensor with oscillator

Additional indicators and auxiliary level switches can be connected to the current and voltage outputs.

Function

Level measurement with capacitive electrodes

Electrode, product and vessel wall, or electrode and product form a capacitor. The capacitance increases with increasing level.

In either case the oscillator converts this capacitance change into a level proportional measuring signal. This signal is fed to the VEGAMET 307 or 308 for signal conditioning.

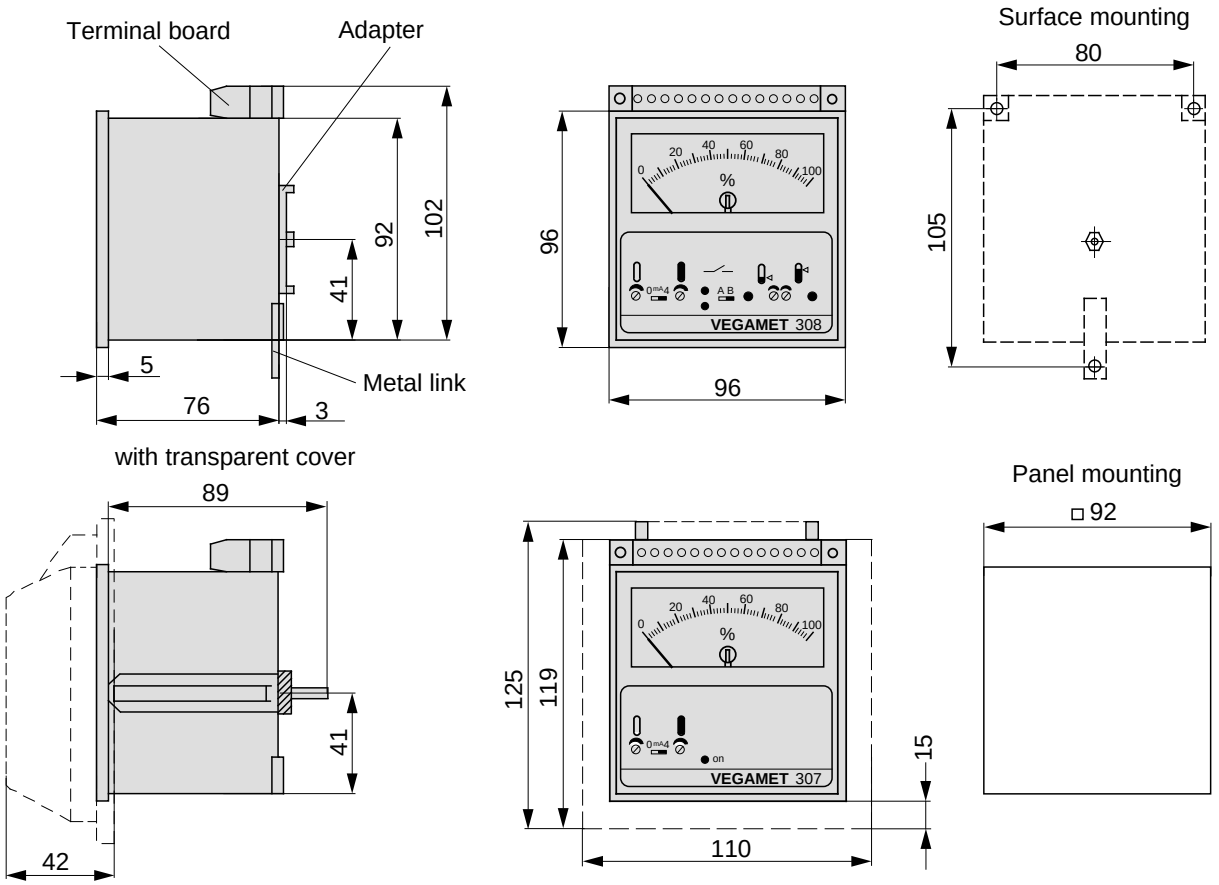
Level measurement with pressure sensors

The diaphragm of the pressure sensor converts the hydrostatic pressure of the product into a linear movement. This movement is transmitted to the plunger-type capacitor. The level of the product therefore changes the capacitance.

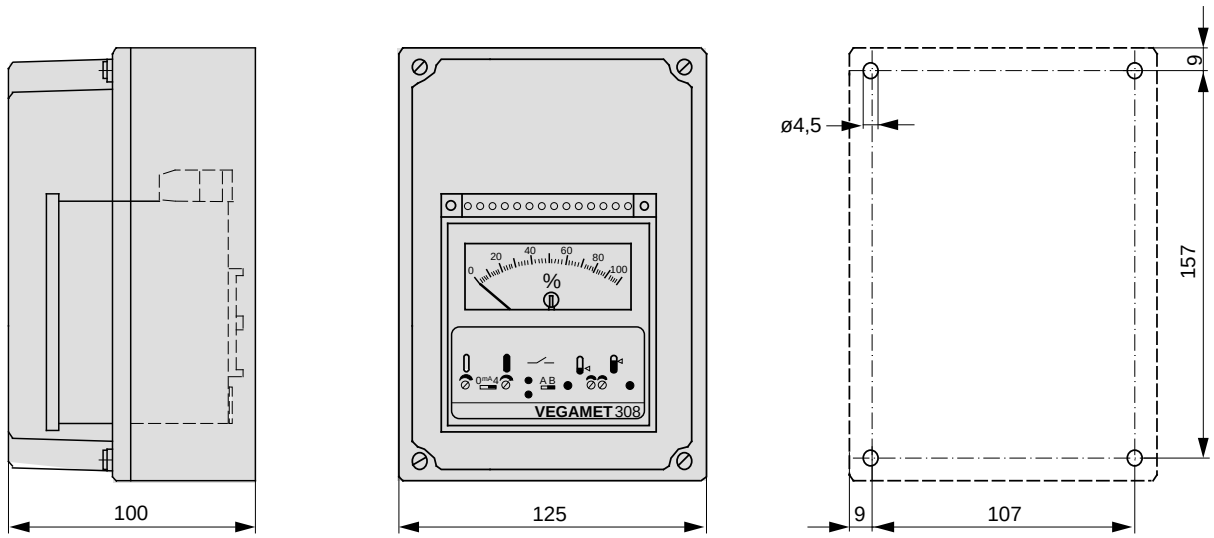
Technical data

Power supply		20 … 250 V AC; 48 … 62 Hz 20 … 90 V DC
Power consumption at U_N		approx. 3 VA
Measuring signal input	Connection line Resistance per conductor Linearity error Temperature error	2-wire, unscreened (standard cable) max. 50 Ohms 0,1 % measuring range 0,01 % measuring range / 10 K
Adjustment data	Empty adjustment range Current difference between empty and full adjustment:	3,5 … 17 mA > 600 µA
Indication		analog indication 0 … 100 %
Current output	Range Load Resolution Linearity error Temperature error	0 … 20 mA or 4 … 20 mA (adjustable) max. 750 Ohm 0,05 % 0,025 % measuring range 0,025 % measuring range / 10 K
Voltage output	Range Resolution Linearity error Temperature error	0 … 10 V, max. 1 mA (short-circuit protected) 0,05 % 0,025 % measuring range 0,025 % measuring range / 10 K
Relay output (only VEGAMET 308)	Contact Function Mode Relay data: Contact material min. turn-on voltage switching current max. turn-on voltage switching current max. breaking power	1 spdt two-point switching A/B AgCdO and Au plated 10 mV 10 µA AC 250 V, DC 60 V AC 2A, DC 1 A 125 VA, 60 W
Permissible ambient temperature (housing) Storage and transport temperature		–25°C … +60°C / –4°F … +140°F –25°C … +70°C / -4°F … +158°F
Housing	Type Protection Dimensions	plastic ABS IP 40 w = 96 mm, d = 76 mm, h = 102 mm
Pluggable multipoint connector (cross section area of conductor)		max. 2,5 mm²
Weight		approx. 270 g

Dimensional drawing



Iso-housing IP 55 for series 300 (Option)



Mounting instructions

The instrument is suitable for panel or surface mounting. The required parts are attached.

Panel mounting

- Pull pluggable multipoint connector on the instrument upwards.
- Screw in and fasten the pin on the rear of the instrument.
- Push instrument into the front panel cut-out.
- Push the terminal from the back on the pin and fasten with the screw.

When using the lockable transparent cover proceed as follows:

- Open cover.
- Push the frame from the back over the upper instrument edge.
- Further mounting as described above.

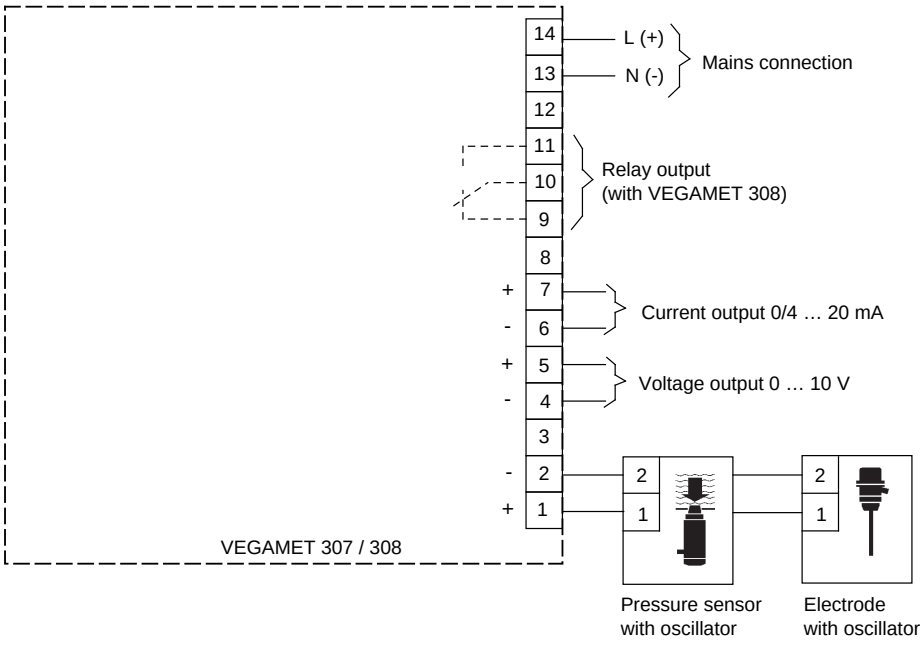
Surface mounting

a) Screw fastening
- Push the metal sleeve in the instrument cut-out (see sketches)
- Fasten the instrument with 3 screws to the mounting plate.

For increased protection, Iso-housing with transparent cover (protection IP 55) is available (mounting of the instrument into the housing as described under a).

b) Rail mounting (Snap-in)
- Fasten adapter plate for rail TS 35 x 7,5 mm acc. to EN 50 022 on the back of the instrument with a screw (spring of the adapter must be below).
- Plug the instrument from the bottom to the carrying rail and push until snap-in.

Electrical connection



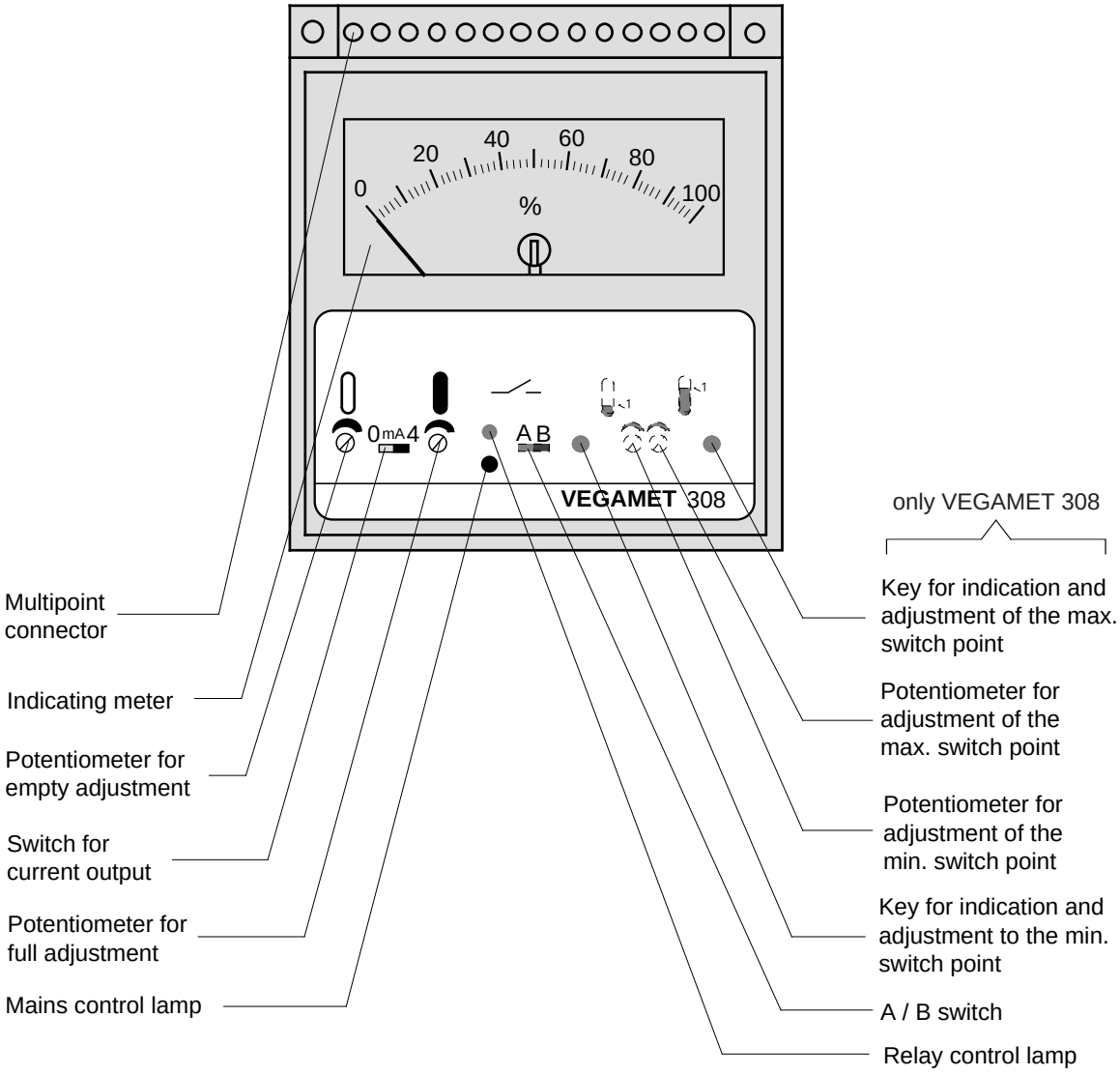
The electrical connection is made on the multipoint connector acc. to the diagram on the upper part of the housing.
Standard 2-wire cable can be used between VEGAMET and transducer.
If electromagnetic interference is expected, screened cable should be used.

Protective measures:
If voltage spikes are expected, the use of overvoltage arresters is recommended.

Observe TIB "overvoltage arresters" for their connection!

Indicated value	Current output	Voltage output
0 %	0 / 4 mA	0 V
100 %	+ 20 mA	+ 10 V

Indicating and operating elements



Start-up

- Adjust the requested current output range 0 … 20 mA or 4 … 20 mA.
- Feed supply voltage, **should comply with the voltage stated on the connection diagram.**
- Carry out adjustment and switch point adjustment (VEGAMET 308) acc. to the following description.

Adjustment
Empty and full adjustment via the spindle potentiometer. The integrated slide clutch avoids overwinding.

Before either adjustment each potentiometer must be turned by approx. 22 turns clockwise.

In practice 3 versions are possible to carry out the empty / full adjustment.

a) The level can be set to the required min. level (= 0%) and max. level (= 100 %)

Empty adjustment

- Set level to the required min. level.
- Adjust the indication of the instrument to 0 % by the potentiometer for empty adjustment.

Full adjustment

- Set level to the required max. level.
- Adjust the indication of the instrument to 100 % by the potentiometer for full adjustment.

b) The level in the vessel can be set to the required min. level (= 0 %), but only to a max. level < 100 %

Empty adjustment

- Set level to the required min. level.
- Adjust the indication of the instrument to 0 % by the potentiometer for empty adjustment.

Full adjustment

- Set product to the highest level and check with dip measure (e.g. 80 %).
- Adjust the indication of the instrument to the checked value (in the example 80 %) with the potentiometer for full adjustment.

c) The level in the vessel can be only set to a min. level of > 0 % and a max. level ≤ 100 %

Empty adjustment

- Set product to the low level and check with dip measure (e.g. 20 %)
- Set indication of the instrument to 0 % with the potentiometer for empty adjustment.

Full adjustment

- Set level to highest possible level and check with dip measure (e.g. 60 %).
- Calculate the indicated value to be adjusted: highest level minus lowest level = indicated value to be adjusted.
  In the example: 60 % – 20 % = 40 %.
- Set indication of the instrument to the calculated value (in the example 40 %) with potentiometer for full adjustment.
- Set the indication of the instrument to the actual level (highest level, in the example 60 %) with the potentiometer for empty adjustment.

Switch point adjustment (only possible on VEGAMET 308)

- Set A/B-switch acc. to the following description to the desired mode A or B.

Mode A

When exceeding the adjusted max. level:
Relay de-energized
Relay control lamp lights
Terminals 9-10 are connected through relay

Mode B

When decreasing the adjusted min. level:
Relay de-energized
Relay control lamp lights
Terminals 9-10 are connected through relay

- Adjust switch point for min. level

  Push button for adjustment of the min. switch point and adjust the potentiometer of the indicating instrument to the desired min. value.

- Adjust switch point for max. level

  Push button for adjustment of the max. switch point and adjust the potentiometer of the indicating instrument to the desired max. value.

Adjustment for single-point switching

- Push button for adjustment of the max. switch point and set the indicating instrument with the respective potentiometer to "0".

- Push button for adjustment of the min. switch point and set the indicating instrument with the respective potentiometer to the required value.

Note:
The switching hysteresis is in this case 0,5 %.

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